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SERVICES SUPPLY CHAIN IN THE UNITED STATES NAVY: AN EMPIRICAL STUDY OF CURRENT MANAGEMENT PRACTICES

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ABSTRACT. Services acquisition in the US Department of Defense (DoD) has continued to increase in scope and dollars in the past decade with over $200 billion spent for services in 2008. In this empirical study, we conducted a web-based survey to collect primary data on management practices in services acquisition in the U. S. Navy and studied such areas as contract characteristics, management approaches, and program management issues. The paper presents summary results of our survey, implications of current management practices, and recommendations useful for improving services acquisition in the Navy.

INTRODUCTION

Services acquisition in the US Department of Defense (DoD) has continued to increase in scope and dollars in the past decade. This is not surprising since the service sector represents a prominent and increasing part of the overall economy and the private sector companies in the U.S. (Smeltzer & Ogden, 2002). In fact, even considering the high value of weapon systems and large military

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items purchased in the recent years, the DoD has spent more on services than on supplies, equipment and goods combined (Camm, Blickstein & Venzor, 2004). For example, the Department of Defense obligations on contracts have more than doubled between fiscal years 2000 and 2008 with over $200 billion spent just for services in 2008 (GAO 2009b).

Unfortunately, this increase in services acquisition has not been supported by growth in the human resources in DoD. Contrarily, there has been reduction in the DoD workforce including in the number of skilled acquisition personnel (Gansler, 2009). This, among other factors, may have had an adverse impact on the contracting and management of services acquisition. In fact, the Government Accountability Office (GAO) has issued 16 reports between 2001 and 2009, and the DoD Inspector General (DoD IG) has written 142 reports, on the trends and deficiencies in the DoD acquisition and contracting processes. Both these entities have recognized contract type, project management, and requirements management as some of the vital areas that need further attention. Choosing an appropriate type of contract for service acquisition reduces the risk to the government (GAO, 2001a; GAO, 2001b; GAO 2002; Rendon & Snider. 2008). The use of program management tools is also known to give better results (Rendon & Snider, 2008) and GAO reports have stated that the DoD lacks this type of management tools (GAO, 2007). Finally, it has been proven that lack of appropriate requirements management and oversight of contractor performance lead to excessive expenditure and inadequate utilization of resources (Rendon & Snider, 2008; GAO, 2007). Recently, the Director of Defense Procurement and Acquisition Policy (DPAP) identified the inappropriate use of services contracts in the DoD (DPAP, 2007) and is planning to take actions to improve contracting for services throughout the Department (DPAP, 2006). All these issues lead to the DoD being at “high risk” of paying excessively for services (GAO, 2009a). In fact, as stressed in a recent memorandum for acquisition professionals by the Under Secretary of Defense (USD), Acquisition, Technology and Logistics (AT&L), improving the efficiency of acquisition of products and services is of utmost importance to the DoD (USD-AT&L, 2010).

In many ways, the issues affecting services acquisition are similar to those affecting the acquisition of physical supplies and weapon

systems. However, the unique characteristics of services, such as intangibility and co-production (Fitzsimmons & Fitzsimmons, 2006) combined with the increasing importance of services acquisition and the uniqueness of the DoD acquisition process offer a distinctive and significant opportunity for research into the management of services supply chain in the Department of Defense.

Based on the exploratory research into the acquisition of services in the DoD by Apte, Ferrer, Lewis and Rendon (2006), Apte and Rendon (2007) studied the lack of a well-developed program management infrastructure in services acquisition. We used the results of these studies as a starting point in our current research. The services acquired by the DoD presently cover a very broad set of service activities. In this present research we focus on the services that account for a significant portion of the total cost of services acquisition in the Navy. These are (with their respective codes): Professional, Administrative, and Management Support (R), Maintenance and Repair of Equipment (J), Data Processing and Telecommunications (D), and Utilities and Housekeeping (S). These service categories are considered to be the most common services acquired by the U.S. Navy. The yearly costs (US $ Billions) incurred in acquiring these services in the U.S. Navy between FY00 and FY09 are shown in Figure 1. We note a steady increase in costs for all these service categories with significant jumps in 2002 and 2004 due to the War on Terror.

A broad-brush picture is presented in Table 1 in terms of percentage increase in individual service categories over the last ten years. In summary, the increase in scope and cost for services acquisition in the DoD, and the deficiencies in service acquisition process identified in the GAO and DoD IG reports provided the motivation for the current research.

This paper presents summary results of our empirical study of the management of services acquisition in the U. S. Department of Navy. This is an exploratory study and the objective is to develop high-level and comprehensive understanding of services acquisition. The methodology of survey research was used to conduct this empirical study. The survey questions were developed based on earlier studies by the authors, the findings of the GAO and DoD IG reports, and the theoretical foundations provided by the surveyed academic literature.

FIGURE 1
Cost Trends for Service Categories R, J, D, and S:
FY2000- 2009)

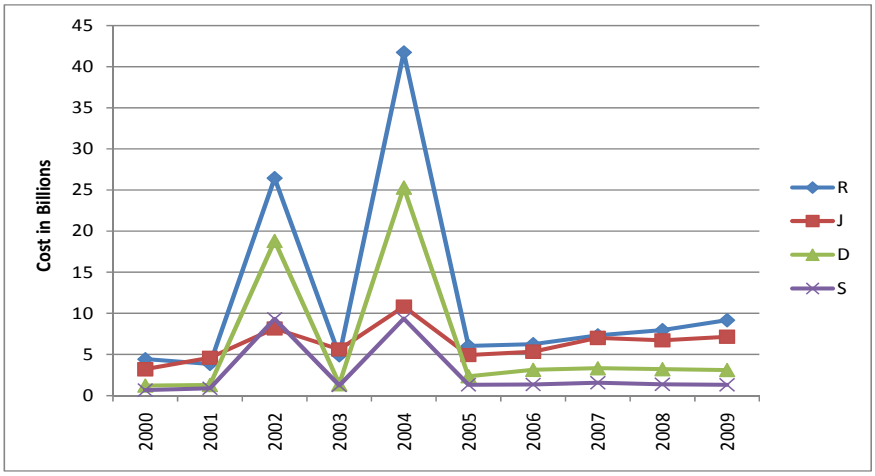


TABLE 1
Percent Increase in Costs for Service Categories R, J, D, and S

Service	Percent Increase (FY2000-2009)
Professional, Administrative and Management Support (R)	107.01
Maintenance and Repair of Equipment (J)	122.86
Data Processing and Telecommunications (D)	155.02
Utilities and Housekeeping (S)	96.09

Source: Federal Procurement Data System (2010).

The survey was deployed to the U.S. Navy and the Naval Supply and the Naval Logistics Command. To the best of our knowledge, this is the first comprehensive study of the current status of services acquisition in the U. S. Navy. Future studies will be based on the outcome of this exploratory study. In this empirical study, we developed and used a web-based survey to collect primary data on contract characteristics, acquisition strategy, procurement methods, and acquisition management practices used at Navy installations. Specifically, we studied the current management practices in areas

such as lifecycle approach, project management, organization/ management structure, adequacy of staffing levels, and training provided to services acquisition personnel.

In the next section we offer the literature review to explain the theoretical foundations of the study. In the third section we describe the methodology used and provide summary results of our survey. In the fourth and final section we provide conclusions and recommendations.

LITERATURE SURVEY AND THEORETICAL FOUNDATIONS

In this section we present a survey of the academic literature useful for the study at hand. By and large, our survey of academic literature found only a small number of articles directly dealing with services acquisition and the associated management practices. Those are discussed later in this section. However, we did find four theoretical frameworks particularly relevant for the study of services acquisition. Specifically, we found that theories such as the agency theory, transaction cost economics, contractual theory, and service operations and supply management can provide the theoretical foundations needed to study management of services acquisition. We designed our empirical study based on these theoretical foundations.

Agency Theory

A principal-agent relationship is echoed in a contract between the government and a contractor (Eisenhardt, 1989). Here, the government (the principal) contracts with the contractor (an agent) to carry out the needed service. In such a contract, the government's objective is to obtain the service at the right price, right time, right quality, and right quantity from the right source (Lee & Dobler, 1977). Another objective for the government is to make certain that the service is obtained in compliance with the public policy requirements (Rendon & Snider, 2008). On the other hand, the contractor's objective is to provide the service to maximize profitability while ensuring the company's growth, and increasing its market share. These conflicting objectives of the principal and the agent induce opportunistic behavior in both parties that can include unwillingness to share information. Agency theory is therefore focused on the process of securing information about the market place, choosing an appropriate agent, and monitoring the performance of the agent. The

agency theory suggests that in studying management practices in services acquisition it would be important to study the way market research is being conducted, the types of contracts being reached, and the surveillance methods being used.

Transaction Cost Economics

Transaction cost economics (Williamson, 1979) essentially deals with outsourcing versus in-sourcing decisions and to that extent it is also related to services contracts between the government and the contractor. In transaction cost economics, the costs incurred during the acquisition- related activities are considered the transaction costs. They include costs for activities such as market research (searching the market place for information about the service being acquired), choosing a contractor by obtaining information about the contractor's capability to deliver the service, developing an effective contract, administering the contract, and monitoring the contractor's performance. The estimation and comparison of these transaction costs can help answer the question of whether to outsource the service or perform it in-house. Transaction cost economics also indicates that investigating practices related to market research, contract types and contract administration including surveillance are important to any study of services acquisition.

Contractual Theory

Contractual theory (Luo, 2002) is an application of the principal-agent theory. This theory deals with how contracts are planned, structured, awarded and executed. Specifically, the contractual theory addresses issues such as the following : How are contracts planned- competitive or sole source? How are they structured- fixed price or cost reimbursement (with or without incentives)? How are they administered (centralized or decentralized, level and type of surveillance, management practices)? The principle goal here is to ensure a complete contract, with reduced uncertainty and risks facing each contracting party. It is clear that contractual theory is concerned with the entire life cycle of an acquisition contract, from requirements definition to source selection to contract administration and surveillance. Hence, in studying services acquisition in the Navy we will need to gather information about management practices about all major activities during the life cycle of an acquisition

contract. Our discussion of certain considerations important for acquisition contracts in the Department of Defense follows.

Contract Characteristics

Government contracting requires that full and open competition is provided since it is the public policy as well as the statutory requirement. Competitive government acquisitions lead to competitively priced proposals that facilitate the government's ability to negotiate appropriate price (Heberling & Templin, 1995). Choosing the proper contract type is a critical factor in successful completion of government projects (Sadeh, Dvir & Shenhar, 2000). Based on the sharing of risk between the government and the contractor, the government contracts are categorized into two contract types: fixed-price or cost -reimbursement contracts. For commercial services available in the market place, a fixed-price contract is perhaps the more appropriate choice. However, in other cases, where the service is more complex and the cost and duration are more difficult to predict, the government may choose to offer a cost -reimbursement type contract and incentivize the contractor for superior performance (Kalu, 1994).

Services Acquisition Management

In DoD the services can be acquired at either installation or regional level, and in general, neither approach can be said to be necessarily better than the other. As Hyvari (2006) argued, for either approach what is critical to success is adopting suitable management practices. The suggested best practices include the use of project teams led by a formal project manager supported by departments such as logistics, finance and engineering (Grant, Baumgardner & Shane, 1997). Effective requirements management, which includes determining, assessing, modifying and terminating the need for the requirements, is critical for success of services acquisitions (Zwikael & Tilchin, 2007).

Program Management Issues

Contractor surveillance is also an important and critical aspect of services acquisition (Zacchea, 2003). Contractor surveillance is necessary to ensure that the contractor's performance is in compliance with the specified requirements of the contract and that

the government receives the service it has contracted and paid for. Many services acquired by the government are technical in nature. Hence, to ensure proper surveillance it is important that the personnel undertaking the surveillance activities are drawn from the knowledgeable technical community and possess the necessary technical knowledge. Therefore setting up the correct oversight and evaluation process is of great importance (Bews & Rossouw, 2002).

Service Operations and Supply Management

Services differ from manufactured products in many ways. The key distinguishing characteristics of services, that have implications for the way services get created, are intangibility, inability to store services, co-production, simultaneity of production and consumption, and the complexity in defining and measuring service outputs (Fitzsimmons & Fitzsimmons, 2006). The above characteristics also lead to differences in marketing for services (Lovelock, 1992; Hutt & Speh, 1998). These distinguishing characteristics and the increasing importance of services acquisition within the DoD, raise several questions of fundamental importance: Is acquisition of services different from the acquisition of products? If so, what are the key differences? Do these differences necessarily lead to different management styles? What management practices should the DoD pay more attention to in managing services acquisition?

In supply management literature, there exist a small number of articles directly dealing with services acquisition and the associated management practices. For example, Shetterly (2002) studied contracting for public bus service and concluded that competitive solicitation methods and penalty for non-performance are key determinants of contractor's performance. Specifically, the competitive solicitation methods reduce unit cost while penalty provisions are strongly associated with an increase in unit cost. In an empirical study, Narasimhan, Jayaram and Carter (2001) studied the drivers of acquisition competence to conclude that there exists a significant positive influence of the extent of investment in acquisition management on the total quality management performance and customer satisfaction. Ellram, Tate and Billington (2004) developed a supply chain framework appropriate for a service supply chain by analyzing the similarities and differences between the applicability of three product-based models: Global Supply Chain Forum Framework,

Supply Chain Operations Reference (SCOR) model, and Hewlett-Packard's Supply Chain Management Model. They applied the above models to a services supply chain to develop a list of issues facing the services supply chain which is also common to the acquisition of services in the DoD. Schiele and McCue (2006) focused on consulting services acquisition in the public sector. They used a case-based methodology to understand the conditions under which the municipal purchasing departments can constructively execute acquisition for consulting services.

Although the abovementioned scholarly articles and studies started the address of issues related to services acquisition in general, the questions of importance to the DoD regarding contract types, program management approaches, requirements management, surveillance, the training provided to acquisition staff, and so forth, remain unanswered. We designed the empirical study described below to begin answering these questions for the DoD.

THE EMPIRICAL STUDY

The objective of this research project was to develop high-level and comprehensive understanding of how services acquisition is managed within the U.S. Navy. To accomplish this objective, the research focused on answering the following specific research questions:

1. What type of acquisition strategy, procurement method, and contracts are used in services acquisition?
2. How is the service acquisition process managed?
3. What management practices—such as lifecycle, program management or project management approach—are used?
4. Are staffing levels adequate and what training is given to contract and project/program management staff?

Research Methodology

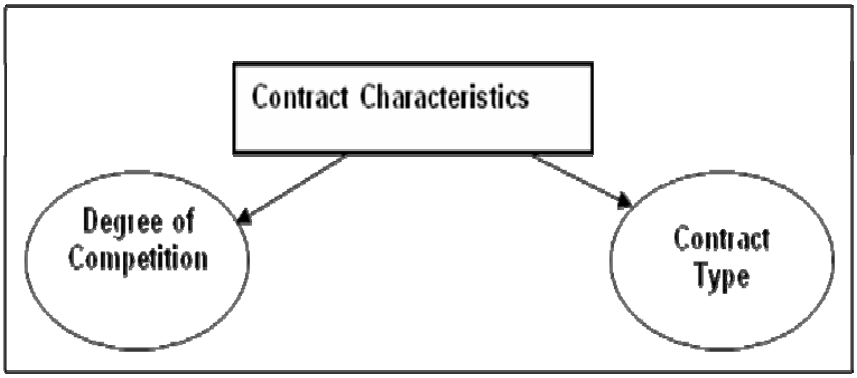
The methodology of web-based survey research was used in this study. The results of prior research studies (Apte et al., 2006; Apte & Rendon, 2007; Compton & Meinshausen, 2007) and the theory discussed earlier was used as a foundation to develop the survey questionnaire. The purpose was to collect empirical data about the

current state of services acquisition management in the Navy so as to answer the research questions raised earlier

The survey was developed and deployed using the SurveyMonkey software. The survey instrument was pilot-tested for its validity before its deployment. The U.S. Navy uses a regionalized organization structure in managing its acquisition function, and there are six Navy Regions in charge of 76 Navy installations in the Continental United States. In practice, the acquisition of services takes place at both the regional and the installation levels. However, in either case, the data regarding dollar amounts obligated and contracting actions are primarily maintained at the regional offices. Consequently, the survey (Miranda & McMaster, 2008) was sent to senior contracting officers at six Navy regional offices plus the Naval Supply and the Naval Logistics Command. We received a total of 10 responses representing services acquisition practices at 66 installations. Thus, effectively, the survey response rate was 87% in that the collected survey data reflects acquisition management practices at 66 out of 76 installations.

The logical structure of the survey instrument is illustrated in Figures 2 and 3. The survey began with questions focusing on specific demographic data for the military department, major command, region, and military installation. The survey then asked specific questions related to the approach, method, and procedures

FIGURE 2
Dominant Procurement Methods



used in the acquisition of services for the four types of services given in Table 1. These questions focused on the following areas:

- *Contract Characteristics*: These questions seek to gain insight into the nature of contracts being used by the Navy used in services acquisition. The contract characteristics such as the degree of competition (competitively bid, sole-source, or other), and the contract type (fixed-price, cost-type, or other) are examined.
- *Acquisition Management Methods*: The main purpose of this broad category of questions is to understand management methods and approaches used in the acquisition of individual services at each phase of the contract management process. For each of the contract management phases, the questions ask whether the phase was conducted at a regional, installation, or some other organizational level.
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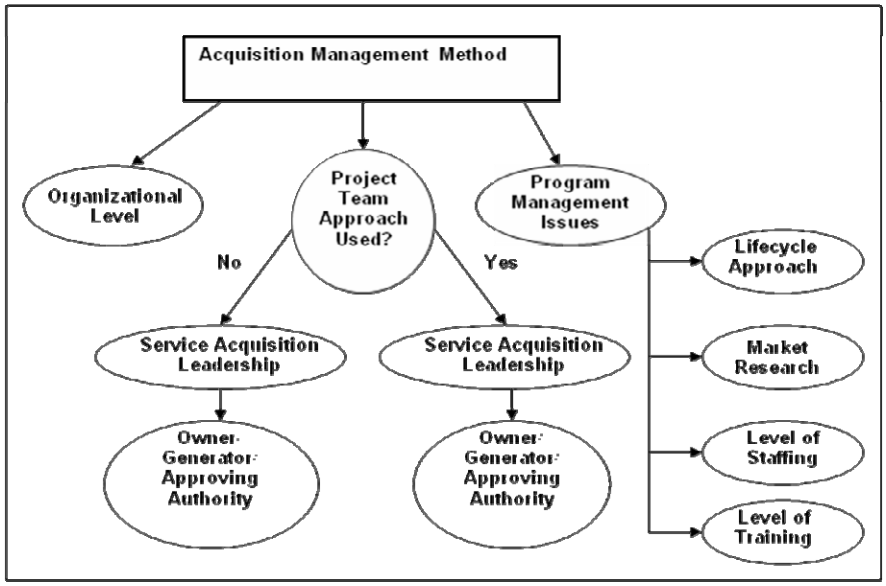
FIGURE 2
Management Approaches



- *Project-team Approach*: These questions ask if the project-team approach is being used in services acquisition and further explore the way this approach is being implemented. For example, the survey seeks to identify the position of the person who led the services acquisition project, such as Program/Project Manager or Contracting Officer. The questions also seek to find information on the owner, generator, and the approving authority of the requirement for a specific service acquisition.
- *Program Management Issues:* These questions use a Likert-type scale (Likert, 1932) to measure the respondents' level of agreement or disagreement with each of the statements defined in the survey. This last set of questions explores the use of a lifecycle approach, use of market research and surveillance techniques, and the adequacy of staffing levels and training provided to the staff in services acquisition management.

At the end, the survey solicits feedback and general comments, if any, from the respondents regarding services acquisition.

SURVEY RESULTS AND OBSERVATIONS

We now present a summary of the survey data we gathered and our observations about the data. Specifically, the data concerning various contract characteristics and acquisition management methods for individual service categories will be presented using the logical structure depicted in Figures 2 and 3.

Contract Characteristics

The data on contract characteristics for four service categories for FY03-FY07 are shown in Table 2. We note that for Professional, Administrative, and Management Support services in FY07, nine out of 10 respondents answered that contracts for these services are being competitively awarded, while one respondent chose the response "other". Upon discussion with subject matter expert we learned that the 'other" response was possibly chosen since the intended response was not represented by either of the first two choices (competitive or sole source) but possibly by a combination of the two. For example, Government-Wide Acquisition Contracts (GWAC) may have resulted from a full and open competitive bidding and

TABLE 2
Contract Characteristics

Fiscal Years	Degree of Competition			Contract type			No. of Responses
	Competitive	Sole Source	Other	Fixed	Cost	Other	
Professional, Administrative, and Management Support							
FY 2003	8	0	2	8	0	2	10
FY 2004	8	0	2	8	0	2	10
FY 2005	8	0	2	8	0	2	10
FY 2006	8	0	2	8	0	2	10
FY 2007	9	0	1	9	0	1	10
Maintenance and Repair of Equipment							
FY 2003	8	0	2	8	0	2	10
FY 2004	8	0	2	8	0	2	10
FY 2005	8	0	2	8	0	2	10
FY 2006	8	0	2	8	0	2	10
FY 2007	8	0	2	8	0	2	10
Data Processing and Telecommunication							
FY 2003	3	0	6	3	0	6	9
FY 2004	3	0	6	3	0	6	9
FY 2005	3	0	6	3	0	6	9
FY 2006	3	1	5	4	0	5	9
FY 2007	3	1	5	4	0	5	9
Utilities and Housekeeping							
FY 2003	2	2	4	5	0	3	8
FY 2004	2	2	4	5	0	3	8
FY 2005	2	2	4	5	0	3	8
FY 2006	2	2	4	5	0	3	8
FY 2007	2	4	4	6	0	4	10

awarded to multiple contractors, but then the delivery orders for an installation may have been awarded as a sole source to one of the GWAC contractors, and hence the response. There could also be some other potential explanations for the response “other”. We also note that nine out of 10 respondents pointed to fixed-price contracts as the contract type used for Professional, Administrative, and Management Support services in FY07.

The data for the remaining three services can be interpreted in a similar manner. For Maintenance and Repair of Equipment contracts in FY07, eight out of 10 respondents indicated that these are

competitively-awarded fixed-price contracts. For Data Processing and Telecommunications service in FY07, only three out of nine respondents indicated that the contracts were from a competitive source; while four out of nine said the contracts were fixed-price. As per the Utilities and Housekeeping service in FY07, two respondents out of 10 said that the contracts administered were competitive and four said that they were sole-source. For the same service, six respondents indicated that the contracts were fixed-priced.

Acquisition Management Methods

Organizational Level

The data regarding the organizational level at which a specific service acquisition phase was handled is shown in Table 3. The data confirmed our initial understanding that the services are being acquired at both the regional and the installation levels. For Professional, Administrative, and Management Support services, the first three phases of acquisition − planning, solicitation and source selection, were being handled in majority of cases at the regional level. But to the extent that the contracted services are delivered to the customer organizations at the installation, it was not surprising to see that the contract administration phase is handled at the installation level in a majority of the cases. The same patterns are observed for the next service, Maintenance and Repair of Equipments. We note that the response "other" was chosen in a significant number of cases for the remaining two services. According to the subject matter experts, complex and technical services such as Data Processing and Telecommunications are at times handled not at the regional or installation levels but at the Navy- wide command level.

The results related to the use of the project team approach, leadership of acquisition process and ownership of requirements are provided in Table 4. For convenience, these results are provided in two parts: first, for the organizations that used the project-team approach (Panel A, Table 4) and then for the organizations that did not use the project-team approach (Panel B, Table 4).

We note in Table 4 that the project team approach is used in six out of 10 cases for Professional, Administrative and Management

TABLE 3
Organization Level Used in Acquisition Phases Project Team Approach

Service/Acquisition Phase	Organization Level			Total No. of Responses
	Regional	Installation	Other	
Professional, Administrative, and Management Support				
Acquisition Planning	5	2	3	10
Solicitation	5	2	3	10
Source Selection	5	3	2	10
Contract Administration	3	4	3	10
Maintenance and Repair of Equipment				
Acquisition Planning	4	3	3	10
Solicitation	4	3	3	10
Source Selection	4	3	3	10
Contract Administration	2	6	2	10
Data Processing and Telecommunication				
Acquisition Planning	3	1	5	9
Solicitation	3	1	5	9
Source Selection	3	1	5	9
Contract Administration	2	2	5	9
Utilities and Housekeeping				
Acquisition Planning	2	2	4	8
Solicitation	2	2	4	8
Source Selection	2	2	4	8
Contract Administration	2	2	4	8

Support services while it is not used in the remaining four cases. However, the use of the project team approach is dramatically less (only two out of nine cases) for Data Processing and Telecommunications service, and significantly higher (five out of seven cases) for Utilities and Housekeeping service.

As we examine the issue of who leads services acquisition in organizations that use a project-team approach (see Panel A, Table 4), we note that a Project Manager (PM) or a Quality Assurance Evaluator (QAE) leads the acquisition process in case of Professional, Administrative and Management Support services but that a Contacting Officer (CO) primarily leads the acquisition process in other services. Investigating the same issue for organizations that do not use the project-team approach (see Panel B, Table 4), we note that for services other than Data Processing and Telecommunication

TABLE 4
Use of Project-team Approach

Panel A. Data for Organizations that Use Project-team Approach						
Service Category	Total No. of Res-ponses	Organizations the Use Project Team Approach				
		Sub total	Who Leads Acquisition?		Who Owns Requirements?	
			Contracting Officers	Other (PM, QAE)	Contracting Officers	Customers (PM, QAE)
Professional, Administrative, and Management Support	10	6	0	6	2	4
Maintenance and Repair of Equipment	9	5	4	1	1	4
Data Processing and Telecommunication	9	2	2	0	1	1
Utilities and Housekeeping	7	5	4	1	2	3
Panel B. Data for Organizations that Do Not Use Project-team Approach						
		Organizations that Do Not Use Project Team Approach				
Professional, Administrative, and Management Support		4	3	1	1	3
Maintenance and Repair of Equipment		4	4	0	1	3
Data Processing and Telecommunication		7	3	4	1	6
Utilities and Housekeeping		2	1	1	1	1

services, a CO leads services acquisition. Concerning the issue of who owns requirements, we note that regardless of the use (or not) of project-team approach, the customer (PM or QAE) usually owns and manages the requirement in a majority of the cases.

Program Management Issues

In addition to the topics mentioned above, our goal was also to investigate various program management issues such as the use of lifecycle approach, adequacy of staffing levels and training, and the use of market research and surveillance techniques. Table 5 provides a list of questions and the responses to those questions using a Likert-type scale. The responses are presented in three categories: percent of respondents that (1) Disagreed (Disagreed or Disagreed Strongly), (2) Neutral, and (3) Agreed (Agreed or Agreed Strongly) with a given statement. In addition, some respondents provided a response but declined to provide a specific answer. The number of such respondents is shown in the "no answer" column. We note that the lifecycle approach was observed to be the preferable strategy for both routine and non-routine services, and market research was always conducted. It was noteworthy that a significant fraction of respondents disagreed with the statements that the number of authorized staff positions was adequate, or that the existing positions were adequately filled. However, a majority agreed that the current staff members were adequately trained and qualified. Finally, we note that only two of eight respondents agreed that proper level of surveillance of contractor performance was provided.

TABLE 5
Lifecycle Approach, Market Research, Billets and Responsibility

Statement	Responses				Total No. of Responses
	Disagree	Neutral	Agree	No Answer	
Life-cycle Approach					
For routine services, this was the dominant strategy	0	2	5	1	8
For non-routine services, this was the dominant strategy	0	3	4	1	8
Market Research					
Market research was conducted for services acquisitions	0	0	8	0	8

TABLE 5 (Continued)

Statement	Responses				Total No. of Responses
	Disagree	Neutral	Agree	No Answer	
Services Acquisition Billets					
There is an adequate number of staff positions	3	2	2	1	8
These positions are adequately filled	4	1	2	1	8
These staff members are adequately trained	1	2	4	1	8
These staff members are adequately qualified	1	1	5	1	8
Responsibility of Staff Members					
Persons identifying requirement also write the SOW/SOO document	5	1	5	0	8
QAE receive prior formal/documented training	1	1	6	0	8
QAE submit written requests of performance and quality of work to CO	1	2	5	0	8
Proper level of oversight is afforded to monitor contractor performance	3	2	2	0	8

DISCUSSION AND CONCLUSIONS

In this section we discuss our research findings and major conclusions, and point out opportunities for further research. The common contract characteristics reflect the use of competitively awarded and fixed-priced contracts. It is in the best interest of the Navy that the trend of increasing the number of competitively bid, fixed-price contracts is maintained. Such contracts, in order to acquire right services at right value, should be endorsed. Fixed-price contracts, in addition to shifting the risk of cost overruns towards the contractor, incentivize the contractor to fulfill the contract within budget.

The services are procured at both installation and regional levels and it is not possible to conclude based on the findings of the current research if one approach or the other is demonstrably preferable.

The relation between where the contracts are managed, at the regional level or at the installation level, and where the services are actually performed may have an impact on the effectiveness of the contract management process. In our exploratory study this functional relationship was not investigated. But this can be a fruitful avenue for future research.

The best practice in contract management prescribes the use of project teams—specifically cross-functional teams—in the management of service procurement projects. In our study for this paper we noticed that only a little more than half of the organizations used a project team approach. Related to the use of project teams is the issue of who leads the acquisition effort at the installation. For services contracts, the contracting officers predominantly led the acquisition process, while on fewer occasions, project managers or customers led the acquisition process. This reflects precarious situations in which the contracting officers find themselves as they manage the services procurement process. Not only are they responsible for managing the contractual aspects of the project, but they are also responsible for leading the acquisition team. Most of the acquisition team members are not part of the contracting organization, and they do not work for the contracting officer. This may be problematic for the success of the contract management effort.

The survey responses to the program management questions provide some additional and interesting insight into the acquisition of services by the Navy, specifically in the area of responsibility for surveillance of contractor's performance. Concerning the surveillance of contractor's performance, we noted that several responders did not agree that proper surveillance was being provided.

As mentioned earlier, the responders either agreed with or were neutral about the statement concerning the use of lifecycle approach for routine or non-routine services. This should be a concern for ensuring proper project management for non-routine services. If services acquired are non-routine in nature, one would expect higher levels of uncertainty—and, thus, higher levels of project risk—in the acquisition process for these services. One useful approach for reducing risk is through the use of a project lifecycle—with project phases, gates, and decision-points for monitoring and controlling the progression of the services acquisition process. Without the use of a

project lifecycle, the services acquisition project may remain vulnerable to excessive risk in terms of not meeting cost, schedule, and performance objectives.

About the use of market research in the acquisition of services, it was not surprising to find respondents agreed with the statement since the *Federal Acquisition Regulation* (*FAR*) explicitly requires that market research be conducted as the first step in any acquisition. Recent GAO and DoD IG reports, however, have suggested a lack of sufficiency of market research documentation in the DoD. It would be interesting to conduct follow-on research to analyze the extent of documentation supporting the market research activities of these agencies.

The survey results also provide some interesting insight into the number of billets (i.e., authorized staff positions) for managing services acquisition. The survey questions focused on the number of billets, staffing of these billets, training of personnel in these billets, and the qualifications of the personnel in these billets. The survey results indicate that the number of billets for services acquisition was generally found to be inadequate. Additionally, we found that the majority of services acquisition billets were not adequately filled. However, we also observed that the respondents generally agreed that services acquisition management personnel on board are adequately trained and qualified.

We believe that it is critically important to reverse the trend of downsizing of acquisition staff. In fact, given the continuing growth in the size and scope of services acquisition, the size of the acquisition staff dealing with services should be increased. In addition, we believe that suitable training should be made available to ensure that qualified acquisition staff is maintained for efficiency and effectiveness of service acquisitions. Training should be provided for working in project teams and using project lifecycles. Finally, contracting officers should also receive training in project management concepts, control techniques of projects, and project leadership.

Concerning the identification of requirements and the writing of requirements documents, our survey indicated that in some cases the contracting officer not only conducts the contracting activities for the procured services, but also writes the requirements documents

that communicate these services to potential offerors. This mixing of roles and responsibilities between requirements and contracting organizations may lead to ineffectiveness in the services acquisition process as well as vulnerabilities for procurement fraud.

The question of whether the contracting officer has the requisite technical expertise to develop the statement of work for the service requirement—IT support services, for example— raises a critical issue. This issue of technical expertise is also raised in the survey and whether a proper level of oversight is afforded to monitor the contractor's performance. The survey suggests that responders are mostly neutral about providing proper surveillance. This is a strong message of concern regarding the effective management of services acquisition.

Concluding Remarks

In this exploratory study we set out to investigate management practices in services acquisition in the U. S. Navy using a web-based survey. Specifically, the deployment of the survey provided real-world data on the characteristics of services contracts (degree of competition, contract/incentive type), various management approaches used (organizational level and project team approach), and other program management issues (use of project lifecycle, extent of market research, adequacy of staffing levels, surveillance and training).

The research presented in this paper makes meaningful contributions to both theory and practice. In our survey of academic literature we identified four theoretical frameworks particularly relevant for the study of services acquisition and have pointed out specific issues that deserve to be studied in the context of services acquisition in the U.S. DoD. We have started to address some of these issues in this exploratory research but much work remains to be done. We believe that the discussion provided in this paper would also be of use to other researchers interested in the topic. In addition, as the first comprehensive study of management practices in services acquisition in the U. S. Navy, this paper is a useful addition to the literature on services acquisition in the public sector. Finally, given the magnitude of dollars involved in services acquisition in the U.S. DoD, the studies of this type are critically important, especially in

the current economic environment, for containing cost and getting the best value for the money spent.

In conclusion, we wish to point out that although the research reported in this paper is exploratory in nature, it has uncovered a number of interesting and important issues regarding the current management practices in services acquisition within the U. S. Navy. The opportunities for conducting further research in services acquisition in the Navy as well as in other branches of the Department of Defense are indeed limitless.

REFERENCES

Apte, U., Ferrer, G., Lewis, I., & Rendon, R. (2006). *Managing the Service Supply Chain in the US Department of Defense: Opportunities and Challenges* (Technical Report NPS-AM-06-032). Monterey, CA: Acquisition Research Program, Naval Postgraduate School.

Apte, U., & Rendon, R. (2007). *Managing the Service Supply Chain in The U.S. Department of Defense: Implications for the Program Management Infrastructure* (Technical Report NPS-PM-07-126). Monterey, CA: Acquisition Research Program, Naval Postgraduate School.

Bews, N.F. & Rossouw, G.J. (2002). "A Role for Business Ethics in Facilitating Trustworthiness." *Journal of Business Ethics*, *39*(4): 377-90.

Camm, F., Blickstein, I., & Venzor, J. (2004). *Recent Large Service Acquisitions in the Department of Defense*. Santa Monica, CA: RAND National Defense Research Institute.

Compton, J.A., & Meinshausen, B.A. (2007). *The Department of Defense's Management of Services Acquisition: An Empirical Analysis* (Master's Thesis). Monterey, CA: Naval Postgraduate School.

DPAP (2006, August 16). "Government Accountability Office High Risk Area of Contract Management." *Memorandum*. Washington, DC: OUSD (AT&L).

DPAP (2007, March 2). "Contracts for Services." *Memorandum*. Washington, DC: OUSD (AT&L).

Eisenhardt, K. M. (1989). "Agency Theory: An Assessment and Review." *Academy of Management Review*, *14* (1): 57-74.

Ellram, L. M., W. L. Tate, & Billington, C. (2004). "Understanding and Managing the Service Supply Chain." *Journal of Supply Chains Management*, *40* (4): 17-36.

FPDS (2010). Federal Procurement Data System. [Online]. Available at www.fpds.gov. (Retrieved on January 8, 2010).

Fitzsimmons, J. A., & Fitzsimmons, M. J. (2006). *Service Management: Operations, Strategy, and Information Technology* (5th ed.). New York: McGraw-Hill.

Gansler, J. S. (2009). "Achieving 21st Century National Security." Testimony before the Senate Armed Services Committee. Washington, DC: U.S. Senate.

Government Accountability Office (2001a, May). *Contract Management: Trends and Challenges in Acquiring Services* (GAO-01-753T). Washington, DC: Author

Government Accountability Office (2001b, November). *Contract Management: Improving Services Acquisition* (GAO-02-179T). Washington, DC: Author.

Government Accountability Office (2002, January). *Best Practices: Taking a Strategic Approach Could Improve DoD's Acquisition of Services* (GAO-02-230). Washington, DC: Author.

Government Accountability Office (2007, May). *Defense Acquisitions: Improved Management and Oversight Needed to Better Control DoD's Acquisition of Services* (GAO-07-832T). Washington, DC: Author.

Government Accountability Office (2009a, February*). Defense Management: Actions Needed to Overcome Long-Standing Challenges with Weapon Systems Acquisition and Service Contract Management* (GAO-09-362T). Washington, DC: Author.

Government Accountability Office (2009b, April). *Defense Acquisitions: Actions Needed to Ensure Value for Service Contracts* (GAO-09-643T). Washington, DC: Author.

Grant, K. P, Baumgardner, C. R., & Shane, G. S. (1997), "The Perceived Importance of Technical Competence to Project

Managers in the Defense Acquisition Community." *IEEE Transactions on Engineering Management, 44* (1): 12-19.

Heberling, M. E., & Templin, C. R. (1995). "Competition Strategies for Defense Projects." *Project Management Journal, 26*(1): 32.

Hutt, M. D. & Speh, T. W. (1998). *Business Marketing* (6th ed.). New York: Dryden Press.

Hyväri, I. (2006). "Success of Projects in Different Organizational Conditions." *Project Management Journal, 37*(4): 31-41.

Kalu, T. (1994). "Designing Cost-Incentive Schemes for Engineering Projects: A Methodology." *Project Management Journal, 25* (3): 40.

Lee, L. & Dobler, D. W. (1971). *Purchasing and Materials Management: Text and Cases*. New York: McGraw-Hill.

Likert, R. (1932). "A Technique for the Measurement of Attitudes." *Archives of Psychology*, *22*(140): 1-55

Lovelock, C. H., (1992). "Are Services Really Different?" In C. H. Lovelock (Ed.), *Managing Services* (2nd ed.; pp. 1-8). Englewood Cliffs, NJ: Prentice-Hall.

Luo, Y. (2002). "Contract, Cooperation, and Performance in International Joint Ventures." *Strategic Management Journal*, *23* (10): 903-919.

Miranda, E. & McMaster R. (2008). *An Empirical Study of the United States Navy's Management and Oversight of Services Acquisition* (Master's Thesis). Monterey, CA. Naval Postgraduate School.

Narasimhan, R., Jayaram, J. & Carter, J.R. (2001). "An Empirical Examination of the Underlying Dimensions of Purchasing Competence." *Production and Operations Management*, *10*(1): 1-15.

Rendon, R. G., & Snider, K. F. (Eds.). (2008). *Management of Defense Acquisition Projects.* Reston, VA: American Institute of Aeronautics and Astronautics.

Sadeh, A., Dvir, D. & Shenhar, A. (2000). "The Role of Contract Type in the Success of R&D Defense Projects under Increasing Uncertainty." *Project Management Journal, 31*(3): 14-22.

Schiele, J. J. & McCue, C. P. (2006). "Professional Service Acquisition in Public Sector Procurement." *International Journal of Operations and Production Management*, *26*(3): 300-325.

Shetterly, D.R. (2002). "Contracting for Public Bus Transit: Do Techniques Employed Make a Difference in Service Outcome." *Journal of Public Procurement*, *2*(1): 73-92.

Smeltzer, L.R. & Ogden, J.A. (2002). "Purchasing Professionals' Perceived Differences between Purchasing Materials and Purchasing Services." *Journal of Supply Chain Management*, *38*(1): 54-70.

USD-ATL (2010, June 28). *Better Buying Power: Mandate for Restoring Affordability in Defense Spending*, *Memorandum* for Acquisition Professionals, Washington, DC: Author.

Williamson, O.E. (1979). "Transaction-Cost Economics: The Governance of Contractual Relations." *The Journal of Law and Economics*, *22*(3): 233-61.

Zacchea, N. M. (2003). "Developing a Strategy For Auditing Outsourced Public Sector Contracts." *The Journal of Government Financial Management, 52*(4): 30-39.

Zwikael, O., & Tilchin, O. (2007). "Effective Customer Requirements Management Using An Information Supply Based Model." *Problems and Perspectives in Management, 5*(4): 50-56 & 91.